

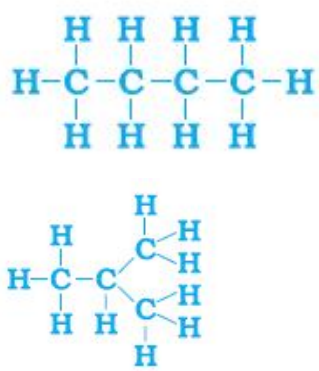
**Strictly Confidential- (For Internal and Restricted Use Only) Secondary School Examination**  
**SUMMATIVE ASSESSMENT - II**  
**March 2015**

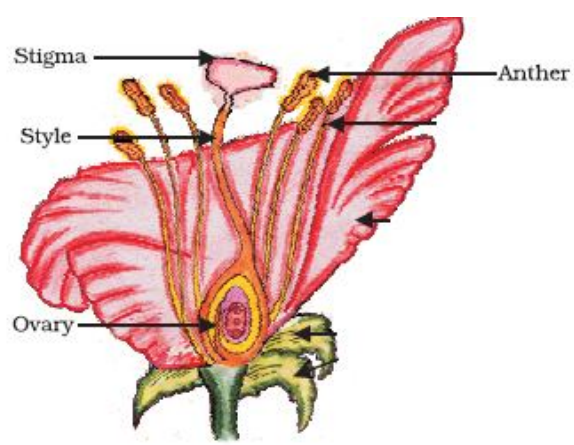
**Marking Scheme – Science (Vocational) 531/3**

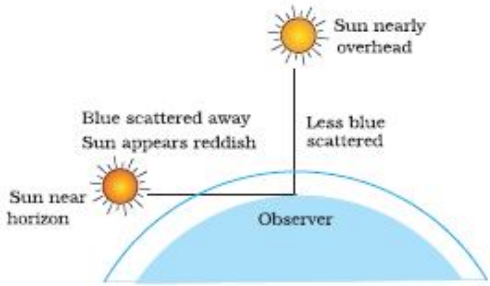
1. The Marking Scheme provides general guidelines to reduce subjectivity in the marking. It carries only suggested value points for the answer. These are only guidelines and do not constitute the complete answer. Any other individual response with suitable justification should also be accepted even if there is no reference to the text.
2. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed.
3. If a question has parts, please award marks in the right hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left hand margin.
4. If a question does not have any parts, marks be awarded in the left hand side margin.
5. If a candidate has attempted an extra question, marks obtained in the question attempted first should be retained and the other answer should be scored out.
6. Wherever only two/three of a 'given' number of examples/factors/points are expected only the first two/three or expected number should be read. The rest are irrelevant and should not be examined.
7. There should be no effort at 'moderation' of the marks by the evaluating teachers. The actual total marks obtained by the candidate may be of no concern of the evaluators.
8. All the Head Examiners / Examiners are instructed that while evaluating the answer scripts, if the answer is found to be totally incorrect, the (X) should be marked in the incorrect answer and awarded '0' marks.
9.  $\frac{1}{2}$  mark may be deducted if a candidate either does not write units or writes wrong units in the final answer of a numerical problem.
10. A full scale of mark 0 to 100 has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. As per orders of the Hon'ble Supreme Court the candidates would now be permitted to obtain photocopy of the Answer Book on request on payment of the prescribed fee. All Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points given in the marking scheme.

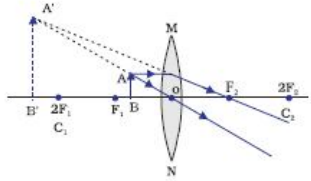
**MARKING SCHEME**  
**CLASS X – VOCATIONAL**

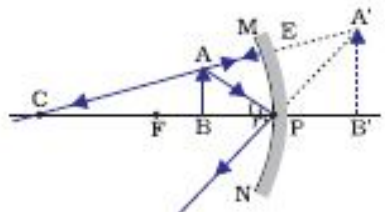
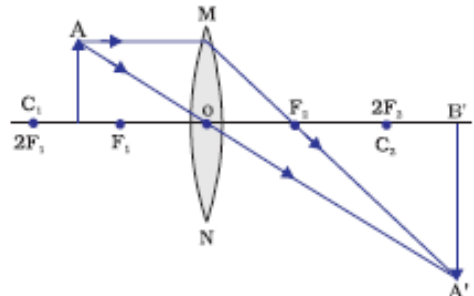
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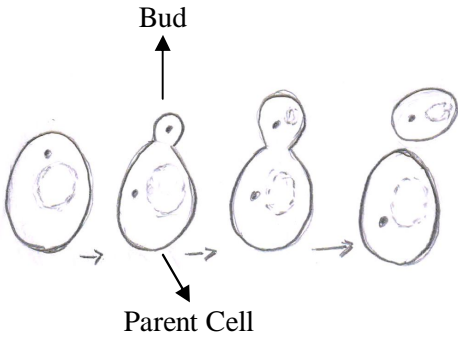
	Expected Answer/ Value point <b>SECTION – A</b>	Marks	Total
Q1.	Ethanoic acid, $\text{CH}_3\text{COOH}$	$\frac{1}{2}, \frac{1}{2}$	1
Q2.	Leishmania , Binary fission	$\frac{1}{2}, \frac{1}{2}$	1
Q3.	Decomposers are micro-organism which break down the complex organic substances into simple inorganic substances that go into the soil and are used up again and again by the plants.	1	1
Q4.	i) Wider field of view, erect image ii) Produce intense, parallel beam of light	$\frac{1}{2}, \frac{1}{2}$ $\frac{1}{2}, \frac{1}{2}$	2
Q5.	Four measures : i. Judicious use of natural resources. ii. Conservation of all non-renewable resources. iii. Reuse and recycle of resources. iv. Minimum utilization of natural resources.	$\frac{1}{2} \times 4$	2
Q6.	Harmful effects of increase in demand of fossil fuels: - i. More stress on the natural resources ii. Increase in global warming iii. Increases environmental pollution. (any two) Two ways to minimize problems – i. Use of alternative sources of energy such as solar devices, biogas, wind energy, etc. ii. Using the resources judiciously, iii. Planting more trees (any two)	$\frac{1}{2} \times 2$ $\frac{1}{2} \times 2$	2
Q7.	<ul style="list-style-type: none"> <li>The phenomenon of existence of two or more compounds having same molecular formula but different structures.</li> <li>Propane has only three carbon atoms in its molecule, hence more than one structure is not possible.</li> <li>  </li> </ul>	1 1 $\frac{1}{2}$ $\frac{1}{2}$	3

Q8.	An atom or a group of atoms / heteroatoms which determine the chemical properties of an organic compound.		1	
	<div> <div>Name</div> <div>Ethanol</div> </div> <div> <div>Structural Formula</div> <math display="block">  \begin{array}{c}  \text{H} \quad \text{H} \\    \quad   \\  \text{H}-\text{C}-\text{C}-\text{O}-\text{H} \\    \quad   \\  \text{H} \quad \text{H}  \end{array}  </math> </div> <div> <div>Functional Group</div> <div>-OH</div> </div>			
	<div> <div>Name</div> <div>Ethanoic acid</div> </div> <div> <div>Structural Formula</div> <math display="block">  \begin{array}{c}  \text{H} \quad \text{O} \\    \quad    \\  \text{H}-\text{C}-\text{C}-\text{OH} \\    \\  \text{H}  \end{array}  </math> </div> <div> <div>Functional Group</div> <div>-COOH</div> <div> <math display="block">  \begin{array}{c}  \text{O} \\     \\  -\text{C}-\text{OH}  \end{array}  </math> </div> </div>	1/2, 1/2		
		1/2, 1/2	3	
Q9.	i) Calcium, Ca	1/2, 1/2		
	ii) 2,8,8,2	1		
	iii) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$	1	3	
Q10.	i) Group-2, because they have 2 electrons in their outermost shell.	1/2, 1/2		
	ii) Be, because it has the least tendency to lose electrons/reactivity of group -2 elements increases from top to bottom	1/2, 1/2		
	iii) Ca, because it has 4 shells/atomic size increases on going down a group	1/2, 1/2	3	
Q11.	DNA copying makes the transmission of traits from parents to the next generation possible.	1		
	Sexual reproduction involves two parents who already have some variations due to DNA copying mechanism and crossing over, etc..			
	New individuals having new combinations of variations are formed due to fusion of gametes.	1		
	These variations accumulate over generations and play an important role in the survival of species and also evolution.	1	3	
Q12.				
	Drawing	1		
	Correct asked labels	1/2 x 4	3	
Q13.	i) The inner lining of the uterus thickens and is richly supplied with blood to nourish the growing embryo.	1 1/2		
	ii) The inner lining slowly breaks and comes out through the vagina as blood and mucous.	1 1/2	3	
Q14.	Example – Weight gain / loss / reading / dancing, etc. (any two)	1/2, 1/2		
	Reasons – Because such changes can not pass on to the DNA of the germ cells.	1		
	Traits – Acquired traits	1	3	

Q15.	<p>a) F1- All plants with round and yellow seeds Reason – Round and yellow colour of seed is a dominant trait over the wrinkled and green colour trait.</p> <p>b) F2- Round and yellow ,Round and green, wrinkled yellow and wrinkled green plants were obtained In the ratio 9:3:3:1 respectively</p>	$\frac{1}{2}$	
		$\frac{1}{2}$	
Q16.	<p>• Statements of the two laws of refraction of light</p>	$\frac{1}{2} + \frac{1}{2}$	
	<p>• <math>c = 3 \times 10^8</math> m/s ; <math>n = \frac{4}{3}</math> ; <math>v_{med} = ?</math></p>	$\frac{1}{2}$	
	<p>Absolute refractive index (<math>n</math>) = <math>\frac{\text{Speed of light in vacuum}(c)}{\text{Speed of light in medium}(v_{med})}</math></p>	$\frac{1}{2}$	
	<p><math>\therefore v_{med} = \frac{c}{n}</math></p>		
	<p><math>= \frac{3 \times 10^8 \text{ m/s}}{4/3} = \frac{3 \times 3 \times 10^8}{4} \text{ m/s} = 2.25 \times 10^8 \text{ m/s}</math></p>	1	3
Q17.	(i) Scattering – Phenomenon of spreading of light (diffused reflected light) caused by minute particles (dust, smoke etc.) in the atmosphere.	1	
	(ii) Sky appears blue because blue color of sunlight scatters more strongly (due to shorter wavelength) than the red color by the fine particles in the air.		
	OR		
	At sunrise the blue color of sunlight get scattered due to smaller wave length while passing through the thicker layers of the atmosphere. The red component (due to longer wavelength) reaches us, giving red appearance, of the Sun.	2	3
	<b>Note:</b> If explained by following diagram (fully labeled) give full credit.		
			
Q18.	The pesticide / chemicals used to protect our crops are washed down into the soil and absorbed by the plants along with water and minerals. They move to higher trophic levels along with the food chain.	2	
	Because these pesticides are non-biodegradable hence not eliminated and keep accumulating progressively.	1	3

Q19.	<p>Fossils are preserved remains or impressions of pre-historic organism in the different strata of the earth's crust.</p> <p style="text-align: center;">Or</p> <p>Fossils are dead remains of animals and plants from remote past.</p> <p>Fossils are formed when dead organism are not completely decomposed. The organism may get trapped in resins of tree, lava of volcanoes or hot mud, which when hardens retains the animal's parts thus forming fossils.</p> <p>Role of fossils – By determining the age of fossils we come to know the type of earth strata present at that time/ We can also know the type of animals and plants present on the earth at that time/ and also helps in establishing evolutionary relationships by providing connecting links.</p> <p>Examples: Archeopteryx/ fossils of some dinosaurs with feathers, fossils of invertebrates in sea bed. (or any other suitable example)</p>	1 1 2 1	5
Q20.	<p>Unisexual flower (eg.) - Papaya / Water melon</p> <p>Bisexual flower (eg.) - Mustard / Hibiscus</p> <p>Pollination – Transfer of pollen grains from anther to stigma of a flower</p> <p>Types – Self pollination</p> <p style="padding-left: 20px;">Cross pollination</p> <p>Significance – It helps in fertilization.</p> <p>After fertilization the zygote divides several times to form an embryo, ovule develops a tough coat and gradually gets converted into seeds.</p>	½ ½ 1 ½ ½ 1	5
Q21.	<p>i) Converging lens/ Convex lens; as it can form real image.</p> <p>ii) a) Between 10 cm and 20 cm from the lens/ more than 10 cm but less than 20 cm from the lens.</p> <p style="padding-left: 20px;">b) More than 20 cm from the lens.</p> <p>iii) Image will not be formed on the wall as the image will be actual.</p> <div style="text-align: center;">  </div>	½, ½ ½ ½ 1 2	5
Q22.	<p>• <math>u = -9 \text{ cm}; \quad f = -18 \text{ cm}; \quad v = ?</math></p> $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ $\therefore \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$ $= \frac{1}{(-18)} - \frac{1}{(-9)}$ $= -\frac{1}{18} + \frac{1}{9}$ $= \frac{-1+2}{18} = \frac{+1}{18}$ <p><math>\therefore v = +18 \text{ cm}</math></p>	½ ½ ½ 1 ½	

	 <p>PB = 9 cm and PF = 18 cm</p>		
	<p style="text-align: right;">Diagram</p> <p style="text-align: center;">Marking of Object distance and focal length</p>	<p>1</p> <p>1</p>	<p>5</p>
Q23.	<p>i) Iris – Controls the size of the pupil of the eye.</p> <p>ii) Pupil – Regulates and controls the amount of light entering the eye.</p> <p>iii) Cornea – Maximum refraction of light, falling on the eye, takes place at the cornea.</p> <p>iv) Ciliary muscles – Modify the curvature of the eye lens/ hence helps in adjusting the focal length of the eye lens to enable us to see nearby as well as far objects.</p> <p>• How: By creating social awareness through street plays, posters, banners, door to door campaign etc.</p> <p>Why: To develop cooperative working etc.</p> <p>Reason for creating awareness: Donation of our pair of eyes can give vision to two people; Noble cause</p>	<p><math>\frac{1}{2} \times 4</math></p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>
Q24.	<p>Carbon has 4 electrons in its outermost shell .It cannot lose 4 electrons to form <math>C^{4+}</math> because very high energy is required to remove 4 electrons.</p> <p>It cannot gain 4 electrons to form <math>C^{4-}</math> ions because it is difficult for 6 protons to hold on to 10 electrons.</p> <ul style="list-style-type: none"> <li>• Ionic / Electrovalent Bonds ,</li> <li>• Covalent bonds.</li> <li>• There are no charged particles in carbon compounds and hence poor conductors of electricity.</li> </ul>	<p><math>1\frac{1}{2}</math></p> <p><math>1\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p>	<p>5</p>
<b>SECTION – B</b>			
	<p>25) B                      26) C                      27) B</p> <p>28) C                      29) B                      30) B</p> <p>31) A                      32) A                      33) C</p>	<p><math>1 \times 9</math></p>	<p>9</p>
Q34.	 <p>Labeled diagram showing of the object, object distance and focal length</p> <p>Length of the image – (Actual measured length)</p>	<p><math>1\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p>	<p>2</p>

Q35.	<ul style="list-style-type: none"> <li>• Brisk effervescence</li> <li>• CO<sub>2</sub> / Carbon-di-oxide</li> <li>• Lime water will turn milky when this gas is passed through it.</li> </ul>	$\frac{1}{2}$ $\frac{1}{2}$ 1	2
Q36.		Drawing Labeling	1 1 2